

CLAIMS LISTING

1. (Original) In a two cycle internal combustion engine having housing means to provide the necessary spaces in the engine, compressor means to force combustible material into the engine, fuel supply means to supply fuel to the engine for combustion, reciprocating means to compress combustible material held within said housing means between the compressor means and the reciprocating means to cause detonation of said combustible material, wherein the improvement comprises the compressor means can compress more combustible material to the combustion process after detonation commences.
2. (Original) A two cycle internal combustion engine as defined in claim 1 wherein the reciprocating means includes crankshaft means to cause reciprocating motion of a reciprocating part, receive a power transfer from the reciprocating part during combustion, and output engine torque.
3. (Original) A two cycle internal combustion engine as defined in claim 2 wherein said crankshaft means includes output shaft means to output engine torque.
4. (Original) A two cycle internal combustion engine as defined in claim 3 wherein the compressor means include output shaft means to output and receive engine power.
5. (Original) A two cycle internal combustion engine as defined in claim 4 wherein the improvement comprises power transfer means ratably connecting said crankshaft output shaft means to said compressor output shaft means for a transfer of power between them.
6. (Original) A two cycle internal combustion engine as defined in claim 5 wherein the compressor means is comprised of a positive displacement gear type air compressor to compress combustible material into the engine.

7. (Original) A two cycle internal combustion engine as defined in claim 6 wherein said housing means includes said cylinder means to confine the movement of the reciprocating means.

8. (Original) A two cycle internal combustion engine as defined in claim 7 wherein the reciprocating parts includes piston means, piston pin means and connecting rod means with said piston means connected to said piston pin means ratably connected to said connecting rod means and said connecting rod means ratably connected to the crankshaft means for a transfer of power between the crankshaft means and the connecting rod means.

9. (Original) A two cycle internal combustion engine as defined in claim 8 wherein the improvement comprises an exhaust passage means connected between an exterior wall of the housing means and said cylinder means for release of gas contained within the cylinder means.

10. (Original) A two cycle internal combustion engine as defined in claim 9 wherein the improvement comprises intake passage means connected between an exterior wall of the housing means and the interior housing space confining the compressor means for passage of combustible material to the compressor means.

11. (Original) A two cycle internal combustion engine as defined in claim 10 wherein the improvement comprises passage means connecting the outlet of the compressor means to the cylinder means.

12. (Original) A two cycle internal combustion engine as defined in claim 11 wherein the improvement comprises a fuel injector located within the housing means for injection of fuel into the housing means.

13. (Original) A two cycle internal combustion engine as defined in claim 12 wherein said fuel injector injects fuel between the compressor means and the reciprocating means.

14. (Original) A two cycle internal combustion engine as defined in claim 13 wherein the improvement comprises a fuel ignite located within the housing means to ignite combustible material within the housing between the compressor means and the reciprocating.

15. (Original) A two cycle internal combustion engine as defined in claim 14 wherein the improvement comprised intake and exhaust valve means to control the flow of fluids moving between engine housing spaces.

16. (Original) A two cycle internal combustion engine as defined in claim 15 wherein said valve means includes valve port means formed in the housing means between the compressor means and the cylinder means and a valve to cover said valve port means to control the flow of fluids moving between the compressor means and the cylinder means, and between the cylinder means and the exhaust port means.

17. (Original) A two cycle internal combustion engine as defined in claim 16 wherein the improvement comprises oil pump means to pump lubricant to moving parts of the engine.

18. (Original) A two cycle internal combustion engine as defined in claim 17 wherein the housing means includes cooling passage means to contain engine coolant and provide a means to remove excess heat from the housing means.

19. (Original) A two cycle internal combustion engine as defined in claim 18 wherein the improvement comprises bearing means to provide support for to rotating parts.

20. (Original) A two cycle internal combustion engine as defined in claim 19 wherein the improvement comprises throttle means to control the supply of gas entering the intake passage means so the combustion process can be controlled.

21. (Original) A two cycle internal combustion engine as defined in claim 20 wherein said positive displacement gear type air compressor includes two gear shafts divided into five separate gear pumps to pump all the working fluids the engine uses, air, coolant, oil, and fuel having an air compressor having an air compressor to pump air into the engine, a gear pump to each side of the compressor gears to pump engine oil, and beside one said oil gear pumps a coolant gear pump to pump engine coolant, and beside the other oil gear pump a fuel gear pump to pump engine fuel.

22. (Original) In a two cycle internal combustion engine having housing means to provide the necessary spaces in the engine, compressor means to force combustible material into the engine, fuel supply means to supply fuel to the engine for combustion, reciprocating means including crankshaft means to compress combustible material held within said housing means between the reciprocating means and the compressor means to cause detonation of the combustible material so the compressor means can compress more combustible material to the combustion process after detonation commences, wherein the improvement comprises said housing divided into three sections along two parallel planes, one plane intersecting the axes of the gear shafts of the compressor means and the second intersecting the axes of the crankshaft, and said three housing sections held tightly together by fastening means.

23. (Original) In a two cycle internal combustion engine having housing means to provide the necessary spaces in the engine, compressor means to force combustible material into the engine, fuel supply means to supply fuel to the engine for combustion, reciprocating means including crankshaft means to compress combustible material held within said housing means between the reciprocating means and the compressor means to cause detonation of the combustible material so the compressor means can compress more combustible material to the combustion process after detonation

commences, wherein the improvement comprises valve means to control the movement of fluids within the engine.

24. (Original) In a two cycle internal combustion engine having housing means to provide the necessary spaces in the engine, compressor means to force combustible material into the engine, fuel supply means to supply fuel to the engine for combustion, reciprocating means including crankshaft means to compress combustible material held within said housing means between the reciprocating means and the compressor means to cause detonation of the combustible material so the compressor means can compress more combustible material to the combustion process after detonation commences, wherein the improvement comprises ignition means to control when combustion begins.

25. (Original) In a two cycle internal combustion engine having housing means to provide the necessary spaces in the engine, compressor means to force combustible material into the engine, fuel supply means to supply fuel to the engine for combustion, reciprocating means including crankshaft means to compress combustible material held within said housing means between the reciprocating means and the compressor means to cause detonation of the combustible material so the compressor means can compress more combustible material to the combustion process after detonation commences, wherein the improvement comprises throttle means to control the flow of combustible material into the engine.

26. (Original) In a two cycle internal combustion engine having housing means to provide the necessary spaces in the engine, compressor means to force combustible material into the engine, fuel supply means to supply fuel to the engine for combustion, reciprocating means including crankshaft means to compress combustible material held within said housing means between the reciprocating means and the compressor means to cause detonation of the combustible material so the compressor means can compress more combustible material to the combustion process after detonation

commences, wherein the compressor means is comprised of a positive displacement gear type air compressor to compress combustible material into the engine.

27. (Original) In a two cycle internal combustion engine having housing means to provide the necessary spaces in the engine, compressor means to force combustible material into the engine, fuel supply means to supply fuel to the engine for combustion, reciprocating means including crankshaft means to compress combustible material held within said housing means between the reciprocating means and the compressor means to cause detonation of the combustible material so the compressor means can compress more combustible material to the combustion process after detonation commences, wherein the improvement comprises power transfer means ratably connecting the compressor means with the reciprocating means for a transfer of power between them.

28. (Original) In a two cycle internal combustion engine having housing means to provide the necessary spaces in the engine, compressor means to force combustible material into the engine, fuel supply means to supply fuel to the engine for combustion, reciprocating means including crankshaft means to compress combustible material held within said housing means between the reciprocating means and the compressor means to cause detonation of the combustible material so the compressor means can compress more combustible material to the combustion process after detonation commences, wherein the improvement comprises fuel injection means to inject fuel into the engine upstream of the intake valve to cause combustion to commence within the engine head.

29. (Original) A two cycle internal combustion engine as defined in claim 28 wherein the improvement comprises valve means having valve stems passing between the rotating part of said compressor means.

30. (Original) A two cycle internal combustion engine as defined in claim 29 wherein the improvement comprises overhead camshaft means driven by the compressor means.

31. (Original) A two cycle internal combustion engine as defined in claim 30 wherein the improvement comprises intake and exhaust valve means actuated by said overhead camshaft means.

32. (Original) A two cycle internal combustion engine as defined in claim 31 wherein the improvement comprises combustion passage means located between the compressor means and the valve means intake valve head.

33. (Original) A two cycle internal combustion engine as defined in claim 32 wherein the improvement comprises fuel injection means to inject fuel into said combustion passage means.

34. (Original) A two cycle internal combustion engine as defined in claim 33 wherein the improvement comprises a camshaft compartment divided along the axis of the camshaft.

35. (Original) A two cycle internal combustion engine as defined in claim 34 wherein the improvement comprises spark ignition means located within the engine housing to ignite the fuel mixture compressed within said combustion passage means.

36. (Original) A two cycle internal combustion engine as defined in claim 35 wherein the improvement comprises a gear train compartment formed within one end of the engine housing means to contain a camshaft gear drive train ratably connecting a compressor gear drive gear to a camshaft drive gear.

37. (Original) A two cycle internal combustion engine as defined in claim 36 wherein said camshaft gear drive train includes a crankshaft driven gear fixedly attached to one compressor gear shaft so the crankshaft can drive said compressor gear shaft.

38. (Original) A two cycle internal combustion engine as defined in claim 37 wherein the compressor includes a positive displacement gear type air compressor to compress combustible material into the engine.

39. (Original) A two cycle internal combustion engine as defined in claim 38 wherein said positive displacement gear type air compressor is divided into four separate gear pumps, two inner gear pumps to compress combustible material into the engine and two outer gear pumps to pump oil to engine parts requiring lubrication and to reduce the wear of the two main compressor gears.

40. (Currently amended) An [two cycle internal combustion] engine [as defined in claim 39 wherein the improvement] comprising[es cooling passages located within the engine head to cool engine head combustion passages, exhaust passages and valves]means for an internal combustion engine wherein said means for an internal combustion engine includes means to transfer the power of combustion to means for a positive displacement compressor, and to means for a reciprocating part.

41. (Currently amended) A internal combustion engine as defined in claim ~~40~~39 wherein said cooling means supplies combustible material for combustion to said compressor means.

42. (Currently amended) An internal combustion engine [having] comprising means for a housing [means], means for a positive displacement compressor [means], means for [to cause] causing combustion of said fuel between said means for a positive displacement compressor [means] and said means for a reciprocating part [means], wherein the improvement comprises said means for a positive displacement compressor [means] and said means for a reciprocating part [means] receive a power transfer from said combustion.

43. (Currently amended) An internal combustion engine as defined in claim 42 [including] wherein said means for a fuel supply includes [including] includes means for

fuel injection [means] to inject fuel between said means for a positive displacement compressor and means for a reciprocating part.

44. (Currently amended) An internal combustion engine as defined in claim 42 [including] further comprising means for ignition [means] to ignite fuel compressed between said means for a positive displacement compressor and said means for a reciprocating part.

45. (Currently amended) An internal combustion engine as defined in claim 42 [including] further comprising means for cooling [means] said engine to remove excess heat.

46. (Currently amended) An internal combustion engine as defined in claim 42 [including] further comprising means for lubrication [means] of engine parts.

47. (Currently amended) An internal combustion engine as defined in claim 42 [including] wherein said means for a housing includes means for a cylinder [means] for containing said reciprocating part.

48. (Currently amended) An internal combustion engine as defined in claim 42 [including] wherein said means for a reciprocating part includes means for a reciprocating piston [means] for receiving a power transfer from said combustion.

49. (Currently amended) An internal combustion engine as defined in claim 42 [including] further comprising means for a [camshaft means] valve for controlling the flow of fluid between said means for a positive displacement compressor and said means for a cylinder.

50. (Currently amended) An internal combustion engine as defined in claim 42 [including] further comprising means for a [valve means] camshaft for actuating said means for a valve.

51. (Currently amended) An internal combustion engine as defined in claim 42 [including] further comprising means for a throttle [means] for controlling the power output of said engine.

52. (Currently amended) An internal combustion engine as defined in claim 42 [including] wherein said means for a reciprocating part includes means for a crankshaft [means] drivingly connected to said means for a positive displacement compressor.

53. (Currently amended) A method for a internal combustion engine, which comprises:
(a) compressing a fuel within a means for a housing [means] between a means for a compressor [means] and a means for a reciprocating [means] to cause combustion wherein the energy of combustion is transferred to said means for a reciprocating [means] and said means for a compressor [means].

54. (Currently amended) The method for an internal combustion engine as defined in claim ~~52~~ 53 wherein:

(~~ab~~) said compressor means is rotationally connected to said reciprocating means.

55. (Currently amended) The method for an internal combustion engine as defined in claim 53 wherein:

(~~ab~~) fuel injection means injects fuel into said housing means.

56. (Currently amended) The[A method for a internal combustion] engine in claim 40, [which comprises

(a) compressing a fuel within a housing means between a compressor means and a reciprocating means] wherein [the energy of combustion is transferred to said reciprocating] wherein said means for an internal combustion engine includes[and said compressor] means for compressing combustible material into the combustion process.

57. (Currently amended) A method for an internal combustion engine, which comprises: compressing a fuel within a housing means between a compressor means and a reciprocating means to cause combustion wherein the energy of combustion is transferred to said reciprocating means and said compressor means; wherein fuel injection means injects fuel into said housing means; and ~~The method for a internal combustion engine as defined in claim 55 wherein:~~

(a) spark ignition means initiates combustion.

58. (Currently amended) Apparatus for a internal combustion engine, which comprises,

(a) a means for a housing [means] including a cylinder, a intake port, and a exhaust port;

(b) a means for a compressor [means] including a positive displacement gear pump for compressing combustible material into the engine for compression and combustion for a transfer of the power of combustion to said means for a compressor;

(c) a means for a reciprocating [means] part including a piston connected to a piston pin, rotatably connected to a connecting rod, rotatably connected to a crankshaft for causing compression and combustion of fuel and a transfer of the power of combustion to said means for a reciprocating part;

(d) a means for a fuel supply [means] including a fuel injector for injecting fuel into the engine for combustion.

[(e) a means to compress fuel between said compressor means and said reciprocating means to initiate combustion, wherein the power of combustion is transferred to said reciprocating means and said compressor means.]

59. (Currently amended) A method for a internal combustion engine, which comprises: compressing a fuel within a housing means between a compressor means and a reciprocating means to cause combustion wherein the energy of combustion is transferred to said reciprocating means and said compressor means; wherein fuel is injection means injects fuel into said housing means; and ~~The apparatus of a internal combustion engine as defined in claim 55, including:~~

(a) a having spark ignition means.

60. (Currently amended) The apparatus of a internal combustion engine as defined in claim ~~55~~ 58, including:

(~~ae~~) a means for cooling the engine to remove excess heat [means].

61. (Currently amended) The apparatus of a internal combustion engine as defined in claim ~~55~~ 58, including:

(~~ae~~) a means for lubrication of engine parts [means].

62. (Currently amended) The apparatus of an internal combustion engine as defined in claim ~~55~~ 58, including:

(~~ae~~) a means for a valve to control the flow of engine fluids means.

63. (Currently amended) The apparatus of a internal combustion engine as defined in claim ~~55~~ 58, including:

(~~ae~~) a means for bearings to support rotating engine parts [means].

64. (Previously presented) In a internal combustion engine having housing means to provide the necessary spaces in the engine, a reciprocating means to output engine power and force combustion products out of the engine, a compressor means to force combustible material into said housing means and compress it there, a valve means to control fluids passing to said reciprocating means, wherein the improvement comprises a fuel supply means to supply fuel into said housing means upstream of said valve means to cause combustion to commence upstream of said valve means.

65. (Previously presented) In a two cycle internal combustion engine having housing means to provide the necessary spaces in the engine, a reciprocating means to output engine power and force combustion products out of the engine, a compressor means to force combustible material into said housing means and compress it there, a valve means to control fluids passing to said reciprocating means, wherein the improvement

comprises a fuel supply means to supply fuel into said housing means upstream of said valve means to cause combustion to commence upstream of said valve means.

66. (New) The engine in claim 56 wherein said means for an internal combustion engine includes means for a crankshaft to cause reciprocating motion of said reciprocating part.

67. (New) The engine in claim 66 wherein said means for a compressor includes means for a gear pump driven by said means for a crankshaft.

68. (New) The engine in claim 67 wherein said means for a reciprocating part includes means for a piston for compressing combustible material within said internal combustion engine.

69. (New) The engine in claim 68 wherein said means for an internal combustion engine includes means for fuel injection for initiating combustion.

70. (New) The engine in claim 69 wherein said means for an internal combustion engine includes means for spark ignition for initiating combustion.